How to Buy an Energy-Efficient Residential Clothes Washer

Energy Efficiency and Renewable Energy
Federal Energy Management Program

Why Agencies Should Buy Efficient Products

- *Executive Order 13123 and FAR section 23.704 direct agencies to purchase products in the upper 25% of energy efficiency, including all models that qualify for the EPA/DOE* ENERGY STAR® *product labeling program.*
- *Agencies that use these guidelines to buy efficient products can realize substantial operating cost savings and help prevent pollution.*
- *As the world's largest consumer, the federal government can help "pull" the entire U.S. market towards greater energy efficiency, while saving taxpayer dollars.*

Efficiency Recommendation

Washer Tub Volume	Annual Energy Consumption	
	Recommended	Best Available
1.6 – 2.0 cu. feet	315 kWh or less	176 kWh
2.1 – 2.6 cu. feet	415 kWh or less	259 kWh
2.7 – 3.3 cu. feet	520 kWh or less	282 kWh

Definition

Annual energy consumption is based on 392 cycles (washings) per year (as prescribed by the DOE test method in 10 CFR 430, Sub-part B, Appendix J).

Where to Find Energy-Efficient Clothes Washers

The federal supply source for clothes washers is the General Services Administration (GSA). GSA sells clothes washers through Schedule 41-I, as well as through its on-line shopping network, *GSA Advantage!* . Look for products that meet the recommended levels.

When buying from a commercial source (retailer or distributor), choose models that qualify for the EPA/DOE ENERGY STAR® label, all of which meet the recommended levels; some manufacturers and retailers display this label on complying models. Alternatively, look at the yellow "EnergyGuide" label to identify models with estimated annual energy consumption figures that meet the Efficiency Recommendation. For a contractor-supplied clothes washer, specify an annual energy use that meets the recommended level for that size.

When buying a commercial clothes washer that is residential in scale (tub volume less than 3.5 cubic feet), consult "How to Buy Energy-Efficient Family-Sized Commercial Clothes Washers," in the "Commercial Appliances" section of this binder.

User Tips

Selecting cold water wash and lower load-size settings, where appropriate for the load, will reduce energy use.

Federal Supply Source:

- General Services Administration (GSA)
  Phone: (816) 926-2389 (Gail Allen)
  www.fss.gsa.gov

For More Information:

- DOE's Federal Energy Management Program (FEMP) Help Desk and World Wide Web site have up-to-date information on energy-efficient federal procurement, including the latest versions of these recommendations.
  Phone: (800) 363-3732
  www.eren.doe.gov/femp/procurement
- DOE has ENERGY STAR® clothes washer model listings and a clothes washer calculator.
  Phone: (800) 363-3732
  www.energystar.gov
- Consumers Union publishes *Consumer Reports* magazine and the *Consumer Reports Annual Buying Guide.* An August, 2000 article in the magazine rates clothes washers.
  Phone: (800) 500-9760
  www.consumerreports.org
- Consortium for Energy Efficiency (CEE) provides information on utility programs promoting energy-efficient clothes washers that meet this recommendation.
  Phone: (617) 589-3949
  www.ceeformt.org
- American Council for an Energy-Efficient Economy (ACEEE) publishes the *Consumer Guide to Home Energy Savings*.
  Phone: (202) 429-0063
  aceee.org
- *Home Energy* magazine provides energy conservation tips.
  Phone: (510) 524-5405
  www.homeenergy.org
- Lawrence Berkeley National Laboratory provided supporting analysis for this recommendation.
  Phone: (202) 646-7950

Clothes Washer Cost-Effectiveness Example (2.65 cu. ft. tub volume)

Performance	Base Model[a]	Recommended Level	Best Available
Energy Factor (ft^3/kWh)	1.18	2.50	4.01
Annual Energy Use	880 kWh	416 kWh	259 kWh
Annual Water Use	15,300 gallons	9,800 gallons	9,800 gallons
With Electric Water Heating			
Annual Electricity Cost	$53	$25	$16
Annual Water/Sewer Cost	$61	$39	$39
Lifetime Utilities Cost	$1,150	$650	$550
Lifetime Utilities Cost Savings	–	**$500**	**$600**
With Gas Water Heating			
Annual Gas Cost	$14.50	$6.60	$3.70
Annual Electricity Cost	$5.20	$3.30	$3.30
Annual Water/Sewer Cost	$61	$39	$39
Lifetime Utilities Cost	$800	$500	$450
Lifetime Utilities Cost Savings	–	**$300**	**$350**

a) The efficiency (Energy Factor) of the Base Model is just sufficient to meet current U.S. DOE national appliance standards.

Definitions

Energy Factor is the inverse of the power consumption of one full wash cycle times the clothes washer tub volume. More simply, it is the volume of clothes washed, in cubic feet, per one kilowatt hour (kWh) of electricity used.

Lifetime Utilities Cost is the sum of the discounted value of annual energy and water costs based on average usage and an assumed clothes washer life of 13 years. Future energy price trends and a discount rate of 3.4% are based on federal guidelines (effective from April, 2000 to March, 2001). Future water and sewer costs are conservatively assumed to increase only at the rate of inflation.

Cost-Effectiveness Assumptions

Annual energy use in this example is based on the standard DOE test procedure for a residential clothes washer undergoing 392 cycles per year. Energy used to heat the water is roughly three-quarters of the total energy use shown. The assumed electricity and gas prices are 6¢/kWh and 40¢/therm, the 1996 federal average energy prices in the U.S. The assumed combined water and waste-water price is $4/1,000 gallons.

Using the Cost-Effectiveness Table

In the example shown above, a clothes washer with electric water heating and an estimated annual energy use of 416 kWh is cost-effective if its purchase price is no more than $500 above the price of the Base Model. The Best Available model, with an estimated annual energy use of 259 kWh, is cost-effective if its price is no more than $600 above the price of the Base Model. With gas water heating, the same two models are cost-effective if their purchase prices are no more than $300 and $350 above the price of the Base Model, respectively.

What if my Utility Prices or Usage are different?

For a different annual number of washes per year, multiply the Lifetime Utility Cost Savings by: $\left(\frac{Your\ cycles\ per\ year}{392\ cycles\ per\ year}\right)$. Adjustments for different utility rates are also possible, but more difficult, and should be performed on Annual Electricity, Gas, and Water/Sewer Costs separately using these ratios: $\left(\frac{Your\ price\ in\ ¢/kWh}{6.0\ ¢/kWh}\right)$, $\left(\frac{Your\ price\ in\ ¢/therm}{40.0\ ¢/therm}\right)$, and $\left(\frac{Your\ price\ in\ \$/1000\ gallons}{\$4.00/1000\ gallons}\right)$. The sum of the resulting annual cost figures should then be multiplied by 10 (a "Uniform Present Value" figure assuming a 13-year lifetime and a 3.4% discount rate) to approximate the Lifetime Utilities Cost.

Metric Conversions

1 cu. foot = 0.028 cu. meters
1 gallon = 3.8 liters

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